

A REVISION OF THE GENUS *PARABEZZIA* MALLOCH
(DIPTERA, CERATOPOGONIDAE)

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In 1951 I restudied the types of *petiolata* Malloch, which is the type species of *Parabezzia* Malloch, and clarified the taxonomic positions of several species which had been erroneously placed in the genus. At the same time I called attention to evidence pointing to the synonymy of *Stilobezzia uncinata* Johannsen (described from a female) with *petiolata* (which was known only from males). I also pointed out that the genus *Diaphanobezzia* Ingram and Macfie known only from the male sex, is a synonym of *Parabezzia*.

In the meantime a large number of specimens of *Parabezzia* from many parts of the western hemisphere have been collected and studied and 11 new species have been recognized. In the following paper I am describing these new species, and presenting a key for the separation of the 15 species now known in *Parabezzia*. A new genus is proposed for one African species erroneously placed in *Parabezzia*, but the position of a second African species in *Parabezzia* is confirmed.

The types of all the new species here described are deposited in the U. S. National Museum in Washington, D. C. Paratypes, when available, will be deposited in the British Museum (Nat. Hist.) in London and the California Academy of Sciences in San Francisco.

I am greatly indebted to Mr. Jack Scott, staff photographer of the Smithsonian Institution, for making the wing photographs.

Terminology: Wing length is measured from the basal arculus to the wing tip. Three costal sections are measured: I from the basal arculus to the tip of vein R₁, II from the tip of R₁ to the tip of the radial sector (R_s), and III from the tip of R_s to the end of the thickened costa between the tips of R_s and M₁. Vein R_s is measured from its proximal juncture with r-m crossvein distad to the wing margin. The antennal ratio is the value obtained by dividing the combined lengths of the last five flagellomeres by the combined lengths of the preceding eight. The maxillary palpus, in most genera five-segmented with the sensoria borne on the third segment, is reduced in *Parabezzia* to four, and the first two are indistinctly segmented so that the proportions are measured in three divisions: the combined lengths of the first and second; the third segment which bears the hyaline sensory filaments; and the fused fourth and fifth segments.

Genus *Parabezzia* Malloch

Parabezzia Malloch, 1915, Bull. Illinois St. Lab. Nat. Hist. 10: 358.—Johannsen, 1943, Ann. Ent. Soc. Amer. 36: 782.—Wirth, 1952, Proc. Ent. Soc. Washington 54: 23. Type-species, *Parabezzia petiolata* Malloch, by original designation.

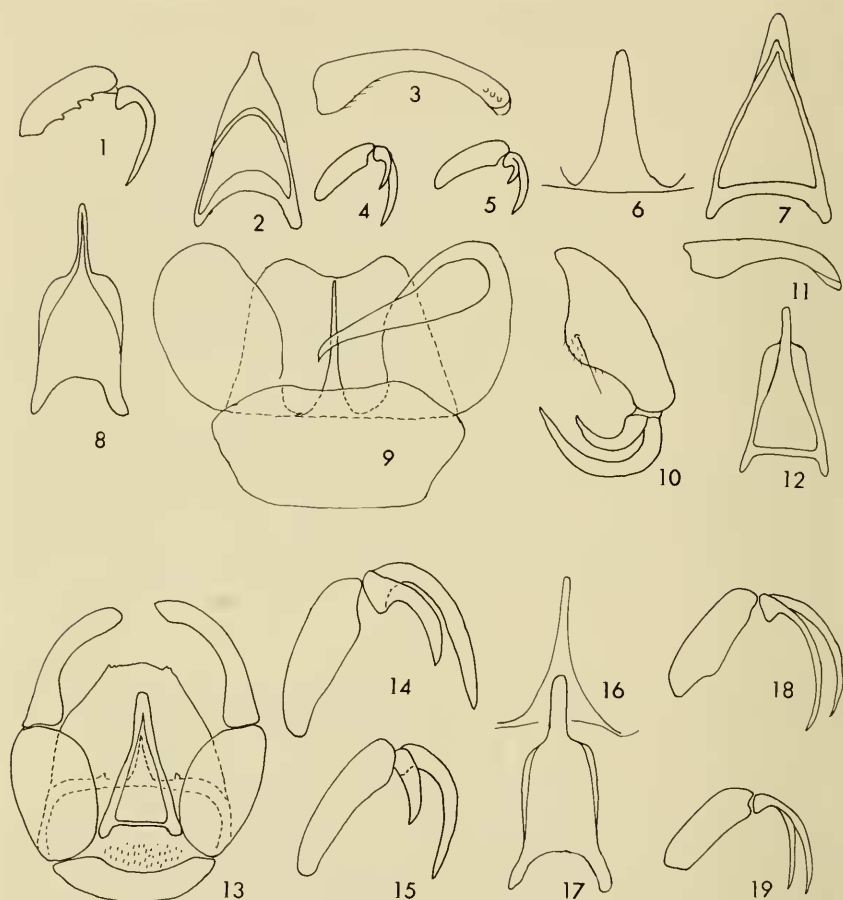


Fig. 1. *Parabezzia brunnea*, fifth tarsomere and claws of mid leg of female; fig. 2. *P. costalis*, male aedeagus; fig. 3. *P. costalis*, male dististyle; fig. 4. *P. downesi*, fifth tarsomere and claws of mid leg of female; fig. 5. *P. downesi*, same, hind leg of female; fig. 6. *P. downesi*, male parameres; fig. 7. *P. downesi*, male aedeagus; fig. 8. *P. inermis*, male aedeagus; fig. 9. *P. inermis*, male genitalia, aedeagus and one dististyle removed, ventral view; fig. 10. *P. jamaicensis*, fifth tarsomere and claws of fore leg of female. fig. 11. *P. panamensis*, male dististyle; fig. 12. *P. panamensis*, male aedeagus; fig. 13. *P. petiolata*, male genitalia, ventral view; fig. 14. *P. petiolata*, fifth tarsomere and claws of mid leg of female; fig. 15. *P. petiolata*, same, hind leg of female; fig. 16. *P. williamsi*, male parameres; fig. 17. *P. williamsi*, male aedeagus; fig. 18. *P. williamsi*, fifth tarsomere and claws of mid leg of female; fig. 19. *P. williamsi*, same, hind leg of female.

Diaphanobezzia Ingram and Macfie, 1931, Dipt. Patagonia & S. Chile, pt. 2, fasc. 4, p. 223. Type-species, *Diaphanobezzia pellucida* Ingram and Macfie, by original designation.

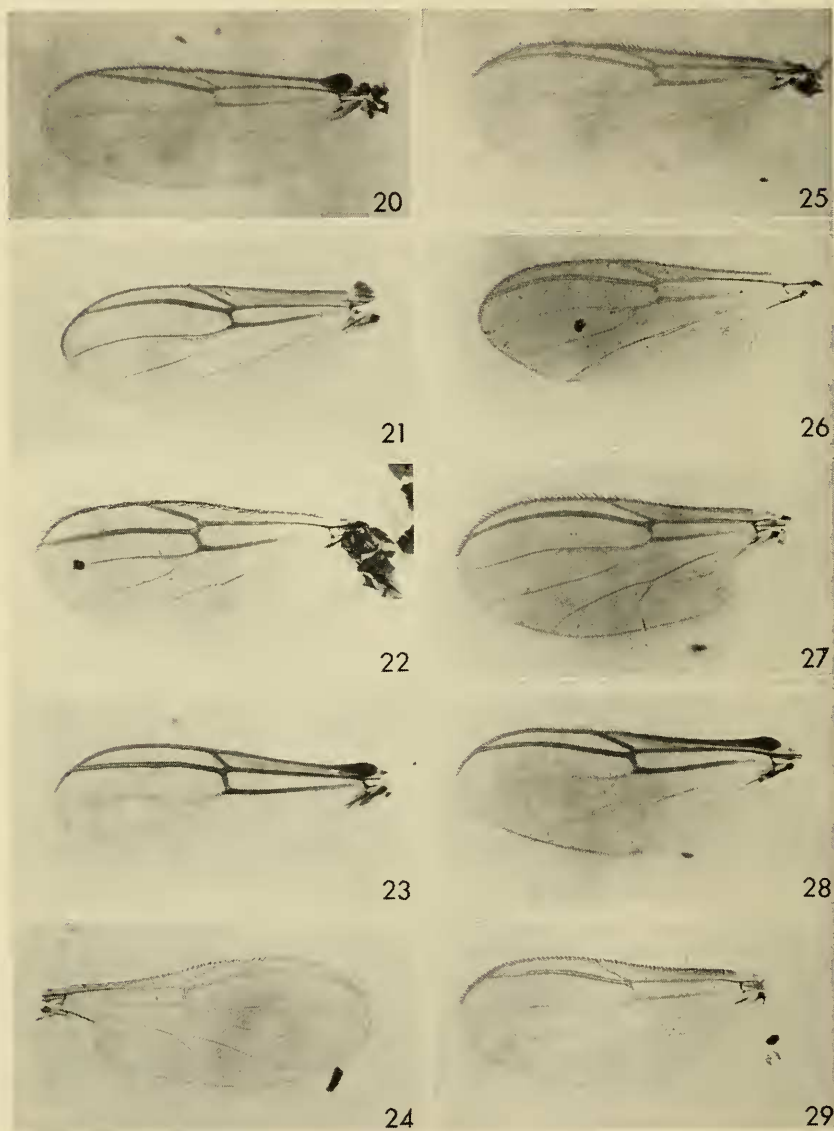
Diagnosis.—Body fairly stout, nearly bare. Eyes bare. Palpus 4-segmented,

third without sensory seta but bearing 1-6 long slender hyaline capitate sensillae (segmentation between 1 & 2 indistinct so 1 & 2 are measured together). Female antenna with antennomeres 3-10 oval, 11-15 long and cylindrical; male antenna with well developed plumes. Scutal pits absent. Scutum without anterior spine or tubercle, with some strong erect bristles in addition to short pubescence. Legs all slender, with a few spinelike bristles; male coxae with dense long spinelike bristles; tarsi with or without ventral spines; fourth tarsomere cordate; fifth tarsomere stout and laterally compressed, sometimes swollen or tuberculate ventrally; empodium absent; claws of female long and curved, equal or unequal, of male small and equal; claws without basal tooth. Wing broad in female, narrower in male, surface with microtrichia very small, especially in males; macrotrichia absent. In female a single long radial cell nearly to wing tip, costa prolonged to wing tip halfway between ends of Rs and Ml; in male ending at 0.6 of wing length; r-m slightly oblique, tip placed slightly past base of Rl; media petiolate, the petiole about as long as crossvein; fringe on anterior margin very short or absent before middle of wing in male, long or short in female. Female with two large sclerotized spermathecae, tip of abdomen blunt. Male genitalia with aedeagus large and triangular, parameres fused in a small, pointed triangular sclerite hidden by aedeagus.

KEY TO THE SPECIES OF *Parabezzia*¹

1. Costa with a large beadlike or scalelike swelling at base near level of basal arculus (fig. 20) 2
Costa without abrupt swelling at base (fig. 27) 6
2. Tibiae and femora blackish 3
Tibiae yellowish; femora yellowish to blackish 4
3. Male dististyle bent or curved in mid portion, with blunt tip (Panama) *costalis* n. sp.
Male dististyle straight in mid portion, with sharp pointed tip (Congo) *falcipennis* Claesrier
4. Fore femur yellowish; large species, wing 1.30-1.38 mm. long 5
Fore femur brownish; small species, wing 1.04 mm. long (Panama) *blantoni* n. sp.
5. All femora yellowish (Puerto Rico) *spangleri* n. sp.
Mid and hind femora brownish black (Massachusetts) *alexanderi* n. sp.
6. Claws subequal or very slightly unequal (figs. 18, 19) 7
Claws moderately to very unequal, at least on mid leg (figs. 4, 5, 10, 14, 15) 8
7. Scutum dull brown, scutellum paler (Arizona) *inermis* (Coquillett)
Scutum shining black, scutellum concolorous (Michigan) *williamsi* n. sp.
8. Legs partly yellowish, at least on hind tibia; small species, wing 0.92-1.00 mm. long 9
All femora and tibiae uniformly blackish or brownish; large species, wing 1.06-1.20 mm. long 10
9. Female scutellum yellowish, abdomen yellowish white; claws (figs. 4, 5) very unequal, the smaller one half as long as the other or less; male

¹ Primarily for females; *pellucida* (Ingram and Macfie) from Argentina is known only from the male, and is probably closely related to *brunnea* n. sp.



Figs. 20-31, photographs of female wings of *Parabezzia* species: 20. *alexanderi*; 21. *blantoni*; 22. *brunnea*; 23. *costalis*; 24. *downesi*; 25. *inermis*; 26. *jamaicensis*; 27. *petiolata*; 28. *spangleri*; 29. *williamsi*.

aedeagus evenly tapered to apex (Ontario) ***downesi*** n. sp.
 Female scutellum blackish, abdomen brown; claws only moderately unequal, the smaller one more than half as long as the other; male aede-

- gus with subapical lateral lobes and slender, peglike tip (Panama) **pauamensis** n. sp.
10. Scutum, femora, and tibiae dull brownish; radial cell long, extending to 0.90–0.96 of wing length; wing infuscated, translucent 11
- Scutum, femora, and tibiae shining dark brown to black; radial cell extending to 0.81–0.95 of wing length; wing hyaline 12
11. Claws of all legs unequal (Panama) **fuscipennis** n. sp.
- Claws of fore tarsus subequal, only one claw (fig. 1) on each mid and hind tarsus (Panama) **brunnea** n. sp.
12. Radial cell short, extending to only 0.81–0.88 of wing length; claws extremely long and slender; flagellomeres of proximal series pale at bases (Texas and Arizona to Panama) **unguis** n. sp.
- Radial cell (figs. 26, 27) longer, extending to 0.95 of wing length; claws stouter; flagellomeres of proximal series all brown in *petiolata* 13
13. Fifth tarsomere (figs. 14, 15) slender or moderately swollen (Arkansas and Illinois to New York and Virginia) **petiolata** Malloch
- Fifth tarsomere (fig. 10) markedly swollen ventrally (Jamaica) **jamaicensis** n. sp.

***Parabezzia alexanderi*, n. sp.**

(Figure 20)

Female.—Wing length 1.38 mm.

Head brown, bases of proximal flagellomeres and all of palpi yellowish. Antenna with lengths of flagellomeres in proportion of 20-13-13-14-14-14-14-18-20-20-20-26; antennal ratio 0.90. Palpal segments in proportion of 16-20-15, third segment with three long hyaline sensory filaments. Mandible with 9 teeth.

Thorax shining black; scutum with rather thick, short, erect brownish hairs; scutellum with 10–15 longer, stouter black hairs. Legs yellowish; coxae, mid and hind femora brownish black; hind tarsal ratio 2.4; fifth tarsomeres without marked ventral swelling or tubercles; claws very unequal on fore and mid legs, subequal on hind leg, moderately long on fore and hind legs, very long and slender on mid leg. Wing (fig. 20) grayish hyaline, the radial veins brownish; costa with large basal swelling, the thickening gradually decreasing distad of basal arcus; costal sections I, II, III in proportion of 110-65-20, Rs 85, Rs ending at 0.88 of wing length. Halter knob whitish.

Abdomen dark brown. Spermathecae collapsed and not in condition to measure, apparently subequal in size.

Male.—Unknown.

Distribution.—Massachusetts.

Types.—Holotype female, 2 female paratypes, Bedford, Mass., 20 July 1961, W. W. Wirth, swept from swamp (Type No. 66661, U.S.N.M.).

Discussion.—This species is named in honor of Dr. Charles P. Alexander, world renowned and beloved Dipterist, whose name is nearly synonymous with the Department of Entomology at the University of Massachusetts. The species is easily recognized by its large basal costal swelling and yellowish legs with only the coxae and the mid and hind femora dark.

***Parabezzia blantonii*, n. sp.**

(Figure 21)

Female.—Wing length 1.04 mm.

Head pale brown including antennae and palpi. Antenna comparatively long and slender, lengths of flagellomeres in proportion of 26-10-10-10-11-12-13-15-20-22-25-25-32, antennal ratio 1.16. Palpal segments in proportion of 10-15-16, third segment with two moderately long hyaline sensory filaments. Mandible with 7 teeth.

Thorax shining black; available specimens rubbed and vestiture not apparent, except scutellum with four long hairs. Legs dark brown, fore femur and tibia paler brown, mid and hind tibiae and all of tarsi yellowish; hind tarsal ratio 2.6; claws of fore and hind legs subequal, long and slender, those of mid leg of available specimens broken off. Wing (fig. 21) smoky grayish brown, darker anteriorly and along radial veins; costa with a short, very broad basal swelling proximad of basal arculus, this portion very setose and distinctly separated from distal portion of costa; costal sections I, II, III in proportion of 90-60-20, Rs 70, Rs ending at 0.90 of wing length; tip of costa extending to tip of vein M_1 . Halter knob slightly infuscated.

Abdomen dark brown. Spermathecae oval without sclerotized necks; unequal, measuring 0.080 mm. by 0.056 mm. and 0.061 mm. by 0.032 mm.

Male.—Unknown.

Distribution.—Panama.

Types.—Holotype female, Almirante, Bocas del Toro Prov., Panama, March 1953, F. S. Blanton, light trap (type No. 66662, U.S.N.M.). Paratype, 1 female, same data except Jan. 1953.

Discussion.—This species is dedicated to its collector, Dr. F. S. Blanton of the University of Florida, who has added many valuable Panama insect specimens to the National Collection. This species is easily recognized by the semidetached basal costal swelling and by the extension of the costa to the tip of vein M_1 .

***Parabezzia brunnea*, n. sp.**

(Figures 1, 22)

Female.—Wing length 1.19 mm.

Head brownish, including antennae and palpi. Antennae broken, not measured. Palpal segments in proportion of 13-16-15, third segment with 5-6 moderately long hyaline sensory filaments scattered along mesal margin. Mandible with 8 teeth.

Thorax dull brown, slightly shining above, scutum and scutellum with moderately numerous, fairly long, fine hairs. Legs brown, tarsi pale yellowish; femora and tibiae moderately stout, with numerous, long, very fine hairs; hind tarsal ratio 3.0; fifth tarsomeres not greatly swollen, those (fig. 1) on mid and hind legs each with 2-3 distinctive sharp brown ventral tubercles; claws moderately strong, subequal on fore leg, only one claw present on each mid and hind tarsus, the second claw absent. Wing (fig. 22) smoky brown, the veins darker brown; fringe of very numerous long hairs well developed around entire wing, especially on costa; costa without basal swelling; costal sections I, II, III in proportion of 120-60-15, Rs 95, Rs ending at 0.96 of wing length, costa extending to about midway

between tips of veins Rs and M₁, vein M₁ ending slightly behind wing tip. Halter infuscated at base, dirty white on knob.

Abdomen dull brown. Spermathecae collapsed and not measured, apparently subequal, slightly ovoid.

Male.—Unknown.

Distribution.—Panama.

Types.—Holotype female, Tocumen, Panama Prov., Panama, Jan. 1953, F. S. Blanton, light trap (Type No. 66663, U.S.N.M.). Paratypes, 2 females. PANAMA: Hermita, Cocle Prov., 12 Sept. 1952, and La Jolla, Panama Prov., Sept. 1951, both collected by F. S. Blanton in light traps.

Discussion.—This species is closely related to *fuscipeunis* n. sp., which, however, has a complete pair of unequal tarsal claws on each leg and the wing much more opaquely infuscated.

***Parabezzia costalis*, n. sp.**

(Figures 2, 3, 23)

Female.—Wing length 1.38 mm.

Head brownish including antennae and palpi. Antenna very elongate and slender, lengths of flagellomeres in proportion of 22-15-15-15-15-16-16-16-30-30-30-32-36, antennal ratio 1.21. Palpal segments in proportion of 12-20-16, third segment with 4 long hyaline sensory filaments. Mandible with 9 teeth.

Thorax shining black; scutum with numerous, very fine erect brown short hairs; scutellum with 10-20 very fine short brown hairs. Legs blackish, tarsi paler brown; hairs inconspicuous; hind tarsal ratio 3.0; fifth tarsomere on fore and mid legs elongate with a distinct subbasal blunt tooth on ventral side; tarsal claws slightly unequal on all legs, extremely long and slender on fore and mid legs, small on hind leg. Wing (fig. 23) hyaline, radial veins and basal section of media very strong and brownish infuscated; costa with basal swelling gradually decreasing past level of basal arculus; costal sections I, II, III in proportion of 100-85-16, section III extending to 0.55 of distance between tips of veins Rs and M₁. Rs 90, Rs ending at 0.95 of wing length, cell Rs very broad, crossvein r-m longer than R₁. Halter slightly infuscated at base, the knob dirty white.

Abdomen dull dark brown. Spermathecae very unequal, large, oval, measuring 0.112 mm. by 0.083 mm. and 0.096 mm. by 0.064 mm.

Male.—Similar to the female, with the usual sexual differences; wing with costa extending to 0.66 of total length, basal costal swelling present; hind tarsal ratio 2.0. Genitalia with basistyle swollen on basomedian portion with strong mesal setae; dististyle (fig. 3) elongate, arcuate, not tapered to tip, the tip blunt; aedeagus (fig. 2) broad across base, not twice as long as basal breadth, with very low, rounded basal arch, slightly tapering but rather stout distally until distal fourth, where it tapers abruptly to bluntly pointed tip; details of parameres not well displayed in available slide mounts.

Distribution.—Panama.

Types.—Holotype female, Mojinga Swamp, Fort Sherman, Canal Zone, 23 July 1952, F. S. Blanton, light trap (Type No. 66664, U.S.N.M.). Allotype male, Los Santos Prov., Pan de Azucar, 1 Oct. 1952 F. S.

Blanton, light trap. Paratypes, 4 males, 37 females, all collected in Panama by F. S. Blanton in light traps: Loma Borracha, C. Z., Oct. 1951, July 1952, 2 males, 7 females; Camaron, Ft. Kobbe, C. Z., 23 June 1952, 1 female; La Jolla, C. Z., Sept.-Oct. 1952, 4 females; Madden Dam, C. Z., 21 Sept. 1952, 4 females; Mojinga Swamp, C. Z., Nov. 1951, June-July 1952, 2 males, 21 females.

Discussion.—This is the only American species with the femora and tibiae entirely dark brown and a large proximal costal swelling. *C. costalis* resembles the African species *falcipennis* Claesrier in this respect but the latter has a sharp pointed, straight, male dististyle.

***Parabezzia downesi*, n. sp.**

(Figures 4-7, 24)

Female.—Wing 1.00 mm. long.

Head pale brown including antenna, palpi whitish. Antenna short; lengths of flagellomeres in proportion of 12-8-8-8-8-9-9-12-12-12-14-29, antennal ratio 1.00. Palpal segments in proportion of 10-13-11, third segment with two moderately long, hyaline sensory filaments. Mandible with 9 teeth.

Thorax shining black, scutellum yellowish; scutum with sparse, erect setose hairs, scutellum with four marginal hairs. Legs yellowish, fore femur and tibia pale brownish, mid and hind femora slightly infuscated, fifth tarsomeres brownish; hairs very sparse and fine; hind tarsal ratio 2.4; fifth tarsomeres not swollen; tarsal claws (fig. 4, 5) moderately long and stout, very unequal on all legs, the smaller one less than half as long as the other. Wing (fig. 24) faintly milky white including the veins; costa without basal swelling; costal sections I, II, and III in proportion of 75-60-10, Rs 75, radial cell very narrow, very long, Rs extending to 0.95 of wing length. Halter whitish.

Abdomen yellowish white. Spermathecae ovoid, slightly unequal, measuring 0.058 mm. by 0.054 mm. and 0.051 mm. by 0.045 mm., sclerotized deeply brownish.

Male.—Similar to the female, with the usual sexual differences; costa extending to 0.62 of wing length; hind tarsal ratio 2.0. Genitalia: Ninth sternum without caudomedian excavation, the posterior membrane with coarse spicules; ninth tergum slightly tapering, the row of long dorsal bristles situated at about proximal third. Basistyle short and stout, almost globular; dististyle curved, slightly constricted in midportion, with bluntly pointed setose tip. Aedeagus (fig. 7) nearly triangular, with very short, only slightly concave basal arch, sides of tapered portion slightly convex proximally, distal portion narrowed to a slender rounded tip. Fused parameres (fig. 6) forming a slender pointed lobe caudad of anterior transverse band connecting bases of basistyles.

Distribution.—Ontario.

Types.—Holotype female, allotype, male Algonquin Park, Ontario, 8 June 1960, W. W. Wirth, reared from sand bar in Madawaska River (Type No. 66665). Paratypes, 22 males, 23 females as follows: 14 males, 13 females, same data as types; 8 males, 10 females, same data except 8 June 1960, reared from marsh.

Discussion.—This strikingly marked species is named in honor of

Dr. J. Antony Downes of the Entomological Research Institute, Ottawa, Canada, in honor of his fine contributions to our knowledge of American and British Ceratopogonidae and his constant inspiration to many leading students of the family. This species is readily distinguished by the contrasting shining black thorax, yellowish scutellum, pale legs, and whitish wings and abdomen.

***Parabezzia falcipennis* Clastrier**

Parabezzia falcipennis Clastrier, 1960, Arch. Inst. Pasteur d'Algérie 38: 293 (male; Congo; fig. wing, male genitalia).

A detailed study of the excellent figures and description of this African species permits its recognition as a true *Parabezzia* closely related to *costalis* n. sp. The female is still unknown. This is the only species known to occur outside the Western Hemisphere and probably represents an ancient faunal element common to the Southern Hemisphere.

***Parabezzia fuscipennis*, n. sp.**

Female.—Wing 1.20 mm. long.

Head brownish. Antenna and palpus not measured in pinned specimen.

Thorax dull dark brown, slightly shining above; scutum with numerous long, fine, brownish hairs, scutellum with about 6 long brown hairs. Legs brownish, with numerous long fine hairs; hind tarsal ratio about 3.6; fifth tarsomere moderately swollen below, without ventral tubercles; claws long, moderately stout, very unequal on all legs, the smaller claw about half as long as the other. Wing very deeply brownish infuscated, appearing opaque, anterior veins darker brown; dense fringe of fine brown hairs around entire wing, especially numerous along costa; costa without basal swelling; costal sections, I, II, III in proportion of 120-72-20, Rs 90, Rs extending to 0.90 of wing length, costa ending 0.7 way from tip of vein Rs to tip of vein M₁; vein M₁ ending at extreme wing tip. Halter brownish infuscated.

Abdomen dull brown. Spermathecae not examined.

Male.—Unknown.

Distribution.—Panama.

Types.—Holotype female (on pin), Mojinga Swamp, Fort Sherman, Canal Zone, Nov. 1951, F. S. Blanton, light trap (Type No. 66666, U.S.N.M.).

Discussion.—*P. brunnea* is very closely related to *fuscipennis*, but has only one claw on each mid and hind tarsus, and the wing is not nearly so deeply infuscated.

***Parabezzia inermis* (Coquillett)**

(Figures 8, 9, 25)

Ceratopogon inermis Coquillett, 1902, Proc. U. S. Nat. Mus. 25: 86 (female; Ariz.).

Bezzia inermis (Coquillett); Kieffer, 1906, Genera Insectorum, fasc. 42: 58.

Probezzia inermis (Coquillett); Malloch, 1914, Proc. Biol. Soc. Washington 27: 137.

Parabezzia inermis (Coquillett); Malloch, 1915, Bull. Illinois St. Lab. Nat. Hist.

10: 359.—Wirth, 1952, Proc. Ent. Soc. Washington 54: 25 (redescr.).

Allobezziia inermis (Coquillett); Kieffer, 1917, Ann. Mus. Nat. Hungarici 15: 328.
Female.—Wing 1.05–1.17 mm. long.

Head brown including antennae and palpi; vertex whitish pollinose. Antenna with lengths of flagellomeres in proportion of 15-10-10-10-10-10-10-15-15-15-17-22; antennal ratio 1.00. Palpal segments in proportion of 12-20-16, third segment with 3 long hyaline sensory filaments. Mandible with 9 teeth.

Thorax dull brown, humeri and narrow anterior margin of scutum whitish pollinose, scutum with two narrow submedian longitudinal vittae grayish pollinose; scutellum paler brown. Legs brownish, tarsomeres 1–4 whitish; femora and tibia with sparse, moderately long fine hairs; hind tarsal ratio 2.2; fifth tarsomere not markedly swollen; claws subequal on all legs, moderately long and slender. Wing (fig. 25) grayish hyaline, anterior veins brownish; fringe with short hairs; costa without basal swelling; costal sections I, II, and III in proportion of 95-70-15, Rs 90; Rs ending at 0.90 of wing length; radial cell rather narrow. Halter slightly infuscated at base, the knob whitish.

Abdomen dull brown. Spermathecae oval, unequal, measuring 0.104 mm. by 0.072 mm. and 0.072 mm. by 0.056 mm.

Distribution.—Arizona, New Mexico, ? California.

New Records.—ARIZONA: Wickenburg, Maricopa Co., June 1951, H. K. Gloyd, light, 1 female. Sycamore Canyon, Ruby, Santa Cruz Co., 22 May 1954, G. D. Butler, light trap, 1 female. NEW MEXICO: Cherry Creek, Pinos Altos, 22 June 1953, W. W. Wirth, 1 female.

Discussion.—This is the only North American species to have the dull brown thoracic color found in the Neotropical species *fuscipennis* and *brunnea*, both of which differ in having unequal tarsal claws, long hairs on the legs, and conspicuous fringe on the costa.

One male from Live Oak Park, California, 24 May 1944, A. L. Melander, may possibly be this species, the male of which has not yet been recognized. The genitalia (figs. 8, 9) are distinctive, primarily due to the shape of the aedeagus (fig. 8), which has a low, rounded basal arch; main body with broad basal portion, then abruptly constricted just beyond midlength to a long, slender stem with parallel sides and slender, rounded tip. The aedeagus of *panamensis* is very similar.

***Parabezzia jamaicensis*, n. sp.**

(Figures 10, 26)

Parabezzia petiolata Malloch; misident., in part, Wirth, 1952, Proc. Ent. Soc. Washington 54: 24 (Jamaica records of *petiolata*).

Female.—Wing length 1.08 mm.

Head brown; antennae broken; palpal segments short, in proportion of 10-15-16, third segment with three short hyaline sensory filaments. Mandible with 9 teeth.

Thorax subshining dark brown; scutum with sparse fine dark hairs. Legs dark brown, tarsomeres 1–3 whitish; femora and tibiae with sparse long fine hairs; hind tarsal ratio 2.3; fifth tarsomeres expanded ventrally in a subbasal rounded pubescent lobe, especially prominent on fore leg (fig. 10); claws very unequal, moderately long and stout, on all legs. Wing (fig. 26) grayish hyaline, the veins

brownish; costa without basal swelling, costal fringe very short; costal sections I, II, and III in proportion of 90-65-15, Rs 80; Rs extending to 0.95 of wing length; radial cell only moderately broad. Halter slightly infuscated at base, the knob whitish.

Abdomen pale brown. Spermathecae oval, very unequal, measuring 0.105 mm. by 0.069 mm. and 0.072 mm. by 0.058 mm.

Male.—Unknown.

Distribution.—Jamaica.

Types.—Holotype female, Bath St. Thomas, Jamaica, 1937, Chapin and Blackwelder (type No. 66667, U.S.N.M.). Paratype, 1 female, Spa Town, Jamaica, 3 Feb. 1937, Chapin and Blackwelder.

Discussion.—The absence of costal swelling, the dark legs, unequal stout tarsal claws, and shining dark brown thorax ally this species to the North American *petiolata* Malloch. However, in *petiolata* the claws are much longer, the fifth tarsomeres lack the distinctive subbasal swelling, and the spermathecae are subequal in size.

***Parabezzia panamensis*, n. sp.**

(Figures 11, 12)

Female.—Wing 0.92 mm. long.

Head brown; antennae broken; palpal segments in proportion of 10-13-15, third segment with two moderately long, hyaline sensory filaments. Mandible with 8 teeth.

Thorax shining blackish; scutum with sparse, moderately long, erect coarse hairs. Legs yellowish brown; femora brownish on fore and mid legs, brownish black on hind leg; tarsomeres 1-4 yellowish; hind tarsal ratio 3.0; femora and tibiae with sparse short hairs; fifth tarsomeres not greatly swollen; claws rather long and slender, only gently curved distally, unequal, the shorter claw about two-thirds as long as the longer on each leg. Wing grayish hyaline, the anterior veins brownish; costa without basal swelling; costal sections I, II, and III in proportion of 80-50-15, Rs 65, radial cell moderately broad; Rs extending to 0.94 of wing length. Halter moderately infuscated, appearing yellowish brown.

Abdomen dull brown. Spermathecae slightly unequal, oval, measuring 0.072 mm. by 0.056 mm. and 0.064 mm. by 0.048 mm.

Male.—Similar to the female with the usual sexual differences. Genitalia with ninth sternum transverse, with shallow caudomedian excavation, the caudal membrane very finely spiculate; ninth tergum rounded caudad, the transverse row of long bristles located just beyond midlength. Basistyle short and rounded; dististyle (fig. 11) moderately curved, with moderately blunt-pointed tip. Aedeagus (fig. 12) with low, transverse basal arch, a pair of short dorsal sclerotized processes from basal arms, main portion slightly tapering, with straight sides, abruptly narrowed at distal fourth to a slender, peglike, elongated tip.

Distribution.—Panama.

Types.—Holotype female, allotype, Camaron, Ft. Kobbe, C. Z., 23 June 1952, F. S. Blanton, light trap (Type No. 66668, U.S.N.M.). Paratypes, 13 males, 6 females, same data as types.

Discussion.—This species resembles *inermis* (Coquillett) in the

shape of the aedeagus, with distinct subapical lateral lobes and slender peglike tip but differs from *inermis* in its shining black thorax, and yellowish brown legs. Among the species without costal swelling, it is distinguished by its unequal tarsal claws, shining blackish thorax, and pale brown legs.

***Parabezzia pellucida* (Ingram and Macfie)**

Diaphanobezzia pellucida Ingram and Macfie, 1931, Dipt. Patagonia & S. Chile, pt. 2, fasc. 4, p. 223 (male; Argentina; fig. wing, antenna, halter, genitalia). *Parabezzia pellucida* (Ingram and Macfie); Wirth, 1952, Proc. Ent. Soc. Washington 54: 26 (combination).

This species, which is known only from the male, is probably closely related to *brunnea* n. sp. from Panama. The wing of *brunnea*, which is unfortunately known only from the female sex, is a darker brown, and the possibility that we are dealing with the two sexes of one species is reduced considerably more by the geographic separation.

***Parabezzia petiolata* Malloch**

(Figures 13–15, 27)

Parabezzia petiolata Malloch, 1915, Bull. Illinois St. Lab. Nat. Hist. 10: 359 (male; Illinois).—Johannsen, 1934, Jour. New York Ent. Soc. 42: 344 (notes).—Wirth, 1952, Proc. Ent. Soc. Washington 54: 23 (redescr.; fig. male genitalia; syn.: *uncinata* (Johannsen)).

Stilobezzia uncinata Johannsen, 1943, Ann. Ent. Soc. Amer. 36: 761 (female; Alabama; fig. wing, tarsal claws).

Female.—Wing length 1.06 mm.

Head brown including antennae, palpi paler brown. Antenna with lengths of flagellomeres in proportion of 15-10-10-10-10-11-12-12-17-20-20-22-20, antennal ratio 1.10. Palpal segments in proportion of 12-17-13, third segment with 2 long hyaline sensory filaments. Mandible with 8 teeth.

Thorax shining black; scutum with sparse, long, coarse bristly black hairs; scutellum with 4-6 long bristly black hairs. Legs blackish, tarsomeres 1-4 whitish; femora and tibiae with sparse fine hairs, a few extensor hairs on tibiae longer; hind tarsal ratio 2.4; fifth tarsomeres slender or moderately swollen, without ventral hump or tubercles; claws (figs. 14, 15) unequal on all legs, the smaller claw about two thirds as long as the other; claws long, moderately stout and curved. Wing (fig. 27) grayish hyaline; radial veins moderately infuscated; costa without basal swelling; costal fringe short; costal sections I, II, and III in proportion of 80-70-10, Rs 90, radial cell moderately broad, narrowing distally, extending to 0.95 of wing length. Halter whitish.

Abdomen dull dark brown. Spermathecae oval, without sclerotized neck, subequal, each measuring 0.080 mm. by 0.056 mm.

Male.—Similar to the female, with the usual sexual differences. Genitalia (fig. 13): Ninth sternum with very shallow caudomedian excavation, the caudal membrane with very coarse spicules; ninth tergum with transverse row of 5 long hairs just proximad of midlength. Basistyle short and stout; dististyle slender and curved, with sharp distal point. Aedeagus nearly triangular in outline, with very low, nearly transverse basal arch, the basal arms projecting only a short distance

straight cephalad, sides regularly tapering to blunt distal point. Parameres with fused median sclerotization triangular, nearly as long as aedeagus.

Distribution.—Ala., Ark., Ill., Kans., Md., N. Y., Va.

New Records.—KANSAS: Liberty, Montgomery Co., 6 June 1963, N. & B. Marston, 1 female (Kans. St. Univ.). MARYLAND: Fairland, Montgomery Co., 27 May 1959, A. A. Hubert, reared from creek margin, 1 male, 2 females. NEW YORK: Blue Mountain Lake, Hamilton Co., 10 June 1960, W. W. Wirth, reared, sand bar, Mud Pond Outlet, 3 males, 5 females. Glenfield, Lewis Co., Independence River, 22 June 1963, W. W. Wirth reared, sandy side pool, 2 males, 3 females. VIRGINIA: Falls Church, July 1958, W. W. Wirth, light trap, 1 male, 1 female. 22 July 1951, W. W. Wirth, reared creek margin, 6 males, 4 females. Mount Solon, Augusta Co., 4 July 1951, W. S. Murray, reared, stream margin, 1 male, 2 females.

Discussion.—This species is very easily confused with *williamsi*, but in *williamsi* the claws are more slender and subequal in size, and the male aedeagus has very characteristic subapical lateral lobes and a slender parallel-sided distal portion.

***Parabezzia spangleri*, n. sp.**

(Figure 28)

Female.—Wing length 1.30 mm.

Head brown; palpi and bases of proximal flagellomeres yellowish. Antenna long and slender; flagellomeres with lengths in proportion of 16-12-12-13-13-14-15-15-25-25-28-28-28, antennal ratio 1.22. Palpal segments in proportion of 14-18-20, third segment with four moderately long hyaline sensory filaments. Mandible with 9 teeth.

Thorax appearing dark brown to black in slide mounted specimen. Legs yellowish, only fifth tarsomeres brownish; hind tarsal ratio 2.8; fifth tarsomere without ventral swelling or tubercles; claws very unequal, the smaller claw two-thirds as long as the longer on fore and mid legs, about a third as long as the longer one on hind leg. Wing (fig. 28) grayish hyaline, the radial veins brownish; costa with marked basal swelling gradually decreasing distad; costal sections I, II, and III in proportion of 100-70-20, Rs 85, Rs ending at 0.92 of wing length, second radial cell moderately broad near base, gradually narrowing distad; costal fringe very short. Halter pale.

Abdomen brownish. Spermathecae poorly visible and not measured, moderately unequal, and ovoid, tapering slightly to the ducts, without sclerotized neck.

Male.—Unknown.

Distribution.—Puerto Rico.

Type.—Holotype female, Maricao Fish Hatchery, Puerto Rico, 23 Dec. 1962, P. and P. Spangler, light trap (Type No. 67384, U.S.N.M.).

Discussion.—This species is dedicated to Dr. Paul J. Spangler of the U. S. National Museum in recognition of his valuable contributions to our knowledge of aquatic insects and his keen interest in the West Indian fauna. The species is easily distinguished by its large costal swelling and entirely pale legs.

***Parabezzia unguis*, n. sp.**

Female.—Wing length 1.12 mm.

Head brown, palpus except last segment, and bases of proximal flagellomeres whitish. Antenna long and slender; lengths of flagellomeres in proportion of 18-12-12-12-12-12-12-12-18-20-20-22-25, antennal ratio 1.03. Palpal segments in proportion of 15-20-15, third segment with 3 long slender hyaline sensory filaments. Mandible with 9 teeth.

Thorax shining black; scutum with sparse, scattered, long black bristly hairs, scutellum with 6 long hairs. Legs blackish, tarsomeres 1-3 contrasting whitish; femora and tibiae with sparse, fine hairs; hind tarsal ratio 2.6; fifth tarsomere long and slender, not swollen; claws strong, long and slender, very unequal, the shorter claw about two-thirds as long as the other on fore and mid legs, half as long on hind leg. Wing grayish hyaline, radial veins brownish; no basal swelling on costa, costal fringe very short and fine; costal sections I, II, and III in proportion of 95-50-25, Rs 70, radial cell moderately narrow; vein Rs nearly straight, not bowed, attaining 0.81-0.88 of wing length. Halter whitish, slightly brownish in some specimens.

Abdomen dull brown. Spermathecae collapsed in specimens examined and not measured, apparently large, subequal, oval in shape without sclerotized neck and not tapering to duct.

Male.—Similar to the female with the usual sexual differences. Genitalia: Ninth sternum with a broad shallow caudomedian excavation, the caudal membrane not spiculate; ninth tergum with transverse row of 8 long hairs at midlength. Basistyle short and stout; dististyle curved, slender distally with pointed tip. Aedeagus with very low, transverse basal arch, the basal arms very short and stout with distinct stout process extending caudal from dorsal side of each lateral angle; main portion moderately broad basally, tapering distally with a slightly abrupt constriction of midlength, distal portion tapered to a slender stem. Parameres with fused mid portion very slender, tapering distally to a narrow pointed process.

Distribution.—Arizona, Mexico, Panama, Texas.

Types.—Holotype female, Sabino Canyon, Pima Co., Arizona, 9 Aug. 1953, G. D. Butler, light trap (Type No. 66669, U.S.N.M.). Allotype male, same data except 4 Aug. 1958, M. S. Adachi. Paratypes, 9 males, 57 females. ARIZONA: 3 males, 7 females, same data as holotype; 1 male, 1 female, same data as allotype. Sedona, Oak Creek Canyon, 29 June 1953, W. W. Wirth, 1 male. Cave Creek, Maricopa Co., June 1952, H. K. Gloyd, light, 1 female. Yank Spring, Sycamore Canyon, Santa Cruz Co., 3 Aug. 1952, H. B. Leech and J. W. Green, 1 female (Calif. Acad. Sci.). Brown Canyon, Baboquivari Mts., 4 Aug. 1961, F. Werner, light trap, 1 female. MEXICO: Hermosillo, Sonora, 12 Aug. 1959, Werner and Nutting, light trap, 1 male, 1 female. PANAMA: Alcalde Diaz, Panama Prov., 10 Oct. 1952, 1 female. Almirante, Bocas del Toro Prov., Oct. 1952, 1 female. Camaron, Ft. Kobbe, C. Z., 23 June 1952, 1 female. El Espino, 18 Sept. 1952, 1 female. Loma Borracho, C. Z., Oct. 1951, July, Aug. 1952, 2 males, 30 females. Mojanga Swamp, Ft. Sherman, C. Z., Nov., Dec. 1951, 2 females. Pilon,

Colon Prov., 25 Aug. 1952, 1 female. Portero, 11 Nov. 1952, 1 female. All collected by F. S. Blanton in light traps. TEXAS: Devils River, Val Verde Co., 13 June 1953, W. W. Wirth, 1 male, 1 female. Kerrville, Aug. 1953, May 1954, L. J. Bottimer, light trap, 6 females.

Discussion.—From the other known species without basal costal swelling, with shining black thorax and blackish femora and tibiae, and unequal tarsal claws, *unguis* is readily separated by the wing venation, vein Rs being unusually short and straight, attaining only 0.81–0.88 of total wing length.

***Parabezzia williamsi*, n. sp.**

(Figures 16, 17, 18, 19, 29)

Female.—Wing length 0.90 mm.

Head brown, palpi and basal portions of antennal segments 3–10 yellowish. Antenna with lengths of flagellomeres in proportion of 10-7-7-7-8-8-8-15-15-16-17-20, antennal ratio 1.32. Palpal segments in proportion of 8-10-12, third segment with 3 long hyaline sensory filaments. Mandible with 7 teeth.

Thorax shining brownish black; scutum with sparse scattered long black bristly hairs, scutellum with 4 long hairs. Legs dark brown, tarsomeres 1–4 whitish; femora and tibiae with sparse fine hairs; hind tarsal ratio 2.5; fifth tarsomeres not swollen; claws (figs., 18, 19) subequal, long and more slender than usual. Wing (fig. 29) without basal costal swelling, costal fringe of very short setae; costal sections I, II and III in proportion of 70-50-15, Rs 60, radial cell moderately broad, extending to only 0.88 of wing length. Halter whitish.

Abdomen dull brown. Spermathecae oval, not tapering to duct, but with short, narrow sclerotized neck, unequal in size, measuring 0.069 mm. 0.045 mm. and 0.056 mm. by 0.040 mm.

Male.—Similar to the female with the usual sexual differences. Ninth sternum with barely perceptible caudomedian excavation, the caudal membrane spiculate; ninth tergum with transverse row of six long hairs at midlength. Basistyle short and stout; dististyle slender and curved, with sharp distal point. Aedeagus (fig. 17) with low rounded basal arch, mid portion with nearly straight sides, abruptly narrowed at distal third with distal portion a slender median process. Parameres (fig. 16) with fused median sclerotization tapering from base to a very slender, parallel-sided caudomedian process.

Distribution.—Fla., Mich., N. Y., S. D., Va.

Types.—Holotype female, allotype male, Douglas Lake, Cheboygan Co., Michigan, 8–15 July 1959, R. W. Williams, emergence trap on beach (Type No. 67385, U.S.N.M.). Paratypes, 50 males, 50 females, same data except dates June–August, 1959.

Other specimens examined.—FLORIDA: Orlando, 22 March 1954, W. E. Snow, 1 female. NEW YORK: Ellis Hollow, Tompkins Co., 15 June 1963, W. W. Wirth, reared, creek margin, 1 male, 1 female. SOUTH DAKOTA: Oral, Fall River, 4 July 1953, L. Edmunds, 1 female. VIRGINIA: Falls Church, 23 June, 1 July 1951, W. W. Wirth, reared, creek margin, 1 male, 3 females.

Discussion.—This species is almost indistinguishable from *petiolata* Malloch, except for the more delicate, long subequal tarsal claws, unequal spermathecae with short slender neck, shorter radial cell of the female, and for the subapically lobed, slender-tipped male aedeagus. It is named in honor of Dr. Roger W. Williams of Columbia University, who collected the extensive type series during his detailed investigation of the ceratopogonid fauna of Douglas Lake, Michigan.

Afrohelea, new genus

Parabezzia capensis de Meillon and Hardy (1954, Jour. Ent. Soc. Southern Africa 17: 67) from South Africa is not a *Parabezzia* but is more closely related to *Echinohelea* Kieffer. The nonplumose male antenna with the five distal flagellomeres elongated, the five segmented palpus, the male genitalia with bulbous basistyles, elongate median lobe of the ninth tergum bearing distilateral winglike plates, bell-shaped aedeagus, and separated parameres, the female fifth tarsomere with short, basally toothed claws, are very distinctive characters placing it near *Echinohelea*. On the other hand the basistyles are still separated by the ring of the ninth segment, the setiferous apicolateral lobes of the ninth tergum are well developed, there are no strong black leg spines, and the wing has only one radial cell. These characters justify the erection of a new genus, which I hereby name *Afrohelea*, with type-species *Parabezzia capensis* de Meillon and Hardy.

REFERENCE

- Wirth, W. W. 1952. The status of the genus *Parabezzia* Malloch (Diptera, Heleidae). Proc. Ent. Soc. Wash. 54: 22-26.

PTINUS VARIEGATUS IN GEORGIA AND KENTUCKY

(COLEOPTERA: PTINIDAE)

The species *Ptinus variegatus* Rossi, 1794, was recorded by me in 1960 (Proc. Ent. Soc. Wash. 62(2):103) as occurring at various localities in North Carolina, South Carolina, and Virginia, U.S.A. Now two more States may be added. Several specimens were collected at Dunwoody, DeKalb Co., Georgia, in the Summer of 1955, at light, by E. F. Menhinick. Five specimens were collected at Barbourville, Knox Co., Kentucky, in April and May of 1965, at light and at large, by R. E. White. I thank Charles A. Triplehorn and Richard E. White for showing these specimens to me.—T. J. SPILMAN, *Entomology Research Division, ARS, U.S. Department of Agriculture, Washington, D.C.*